

Saxifrage (*Saxifraga virginensis* Michx.), and Small Skullcap (*Scutellaria parvula* Michx.) (Table 2).

### Vascular plants of the Campbellford Savanna

Alvar savanna may have occurred over an area of 3–5 square km south of Campbellford, and may have been more or less continuous along much of the Trent River in presettlement times (Catling and Catling 1993). The scattered remnants south of Campbellford on both sides of the river (44°16'37"N, 77°48'04"W, UTM 31C/5 764064) are only the fourth site that has been identified in sufficiently good condition to provide an indication of the composition of the alvar savanna flora. The remnants are rich in native species of open sites (Table 2) and include rare species such as Cooper's Milk-vetch (*Astragalus neglectus* L.), Low Bindweed (*Calystegia spithamea* (L.) Pursh), Secund Rush (*Juncus secundus* Beauv.), and Yellow Pimpernel (*Taenidia integerrima* (L.) Drude. The site is also of interest in having southern species such as Chinquapin Oak (*Quercus muehlenbergii* Engelm.) at their northern limit and boreal species such as Lindley's Aster (*Aster ciliolatus* Lindl.) at their southern limit.

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Received 6 July 1998

Accepted 24 November 1998

## Acceptance of a Gray Wolf, *Canis lupus*, Pup by its Natal Pack After 53 Days in Captivity

RONALD N. SCHULTZ, ADRIAN P. WYDEVEN, and JOHN M. STEWART

Wisconsin Department of Natural Resources, 8770 Hwy J, Woodruff, Wisconsin, 54568, USA

Schultz, Ronald N., Adrian P. Wydeven, and John M. Stewart. 1999. Acceptance of a Gray Wolf, *Canis lupus*, pup by its natal pack after 53 days in captivity. *Canadian Field-Naturalist* 113(3): 509–511.

We demonstrated that a wolf pup can be taken from the wild, treated in captivity, and be successfully returned to its pack after a 53-day absence.

**Key Words:** Gray Wolf, *Canis lupus*, sarcoptic mange, treatment, natal pack, parasitism.

On 3 September 1995, we captured (Mech 1974) a female Gray Wolf (*Canis lupus*) in Bayfield County, Wisconsin, apparently suffering from sarcoptic mange. The pup was estimated to be 130–140 days old (Fuller 1989; Van Ballenberghe and Mech 1975) and weighed 4.8 kg, about 32% of the standard for that age (Van Ballenberghe and Mech 1975). She had alopecia over much of her body and displayed symptoms typical of Sarcoptic mange (Todd et al. 1981). Because a wolf at such a low weight had poor

potential for survival (Van Ballenberghe and Mech 1975), we removed her from the wild and medically treated her in an isolation pen for possible release back into the wild. We are unaware of other attempts to treat wolves medically in captivity for an extended period and then release them back into the wild. Herein, we describe the treatment and successful release of this wolf pup into the wild after 53 days.

This wolf (255F) was one of four members of the Rainbow Lake Pack. Another member, adult male

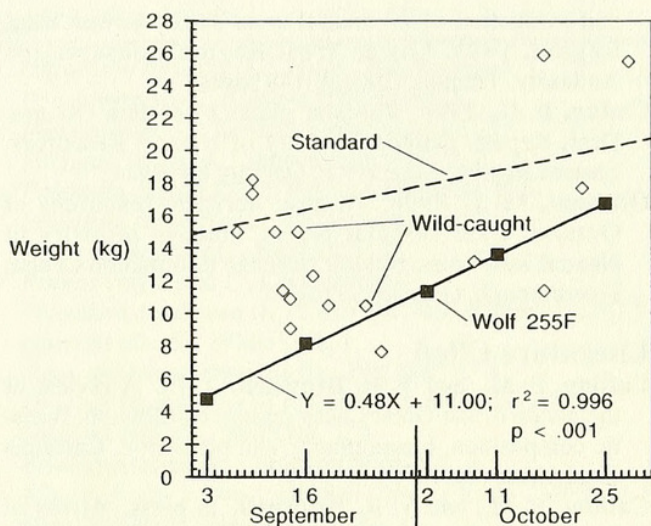


FIGURE 1. Weight gain of Gray Wolf 255F over the course of treatment in captivity. Weight on 25 Oct 95 was estimated by linear regression of prior weights on days in captivity. These data are compared to the standard weights for captive female wolf pups computed by Van Ballenberghe and Meech (1975) from data by Kuyt (1972). Weights for 17 female pups wild-caught during these months (Van Ballenberghe and Mech 1975) are also presented.

223M, was radio collared in 1992, enabling close monitoring of the pack's movements. Pack activity was centered near the Rainbow Lake Wilderness Area in the Chequamegon National Forest (46°24'N, 90°20'W).

The captive facility for wolf 255F was 115 km SE of the pack's territory and consisted of a 3-m<sup>2</sup> enclosure with an artificial den (46 × 81 × 61 cm), 200 m from the nearest human dwelling. The territory of

the nearest wild wolf pack was 4.6 km away. A captive adult female wolf and an adult female wolf-dog hybrid were also being held at the dwelling.

These animals vocalized periodically, and wolf 255F joined these vocalizations. Treatment of wolf 255F began on the day of capture, with both a sponge-on insecticide, Paramite (VET-KEM, Division of Zoecon Corporation, Dallas, Texas 75234, USA), and 2mg/kg subcutaneous injection of Ivermectin (MSD-AGVET, Division of Merck & Co., Rahway, New Jersey 107065, USA). Treatments were repeated as described for domestic dogs. Wolf 255F was also given LA-200 (Pfizer Animal Health, Division of Pfizer, Inc., New York, New York 10017, USA), to prevent any infection. Wolf 255F was vaccinated against Canine Distemper-Adenovirus, Type 2-Parainfluenza, Parvovirus, and *Leptospira Canicola-Icterohaemorrhagiae* Bacterin (Smith Kline Beecham Animal Health, West Chester, Pennsylvania 19280). Fecal samples collected on days 3 and 10 showed no sign of internal parasites or ingested mites (*Sarcoptes scabiei* var *canis*). Wolf 255F was checked once each day at dusk for health status and to provide fresh food and water. Visitations were generally limited to less than 5 minutes, and mild negative conditioning was used to avoid human habitation.

During the first week of captivity, wolf 255F developed severe loose stools possibly from being fed a venison-only diet (*Odocoileus virginianus*) ad lib. Beginning on day 6, wolf 255F's diet was changed to a mixture of 60% venison and 40% dry dog food (Tuffy's, Division of H. J. Heinz, Perham, Minnesota 56573, USA). This 60/40 mixture hardened the stools. Wolf 255F remained on this diet for the rest of her captivity (days 6 to 52).

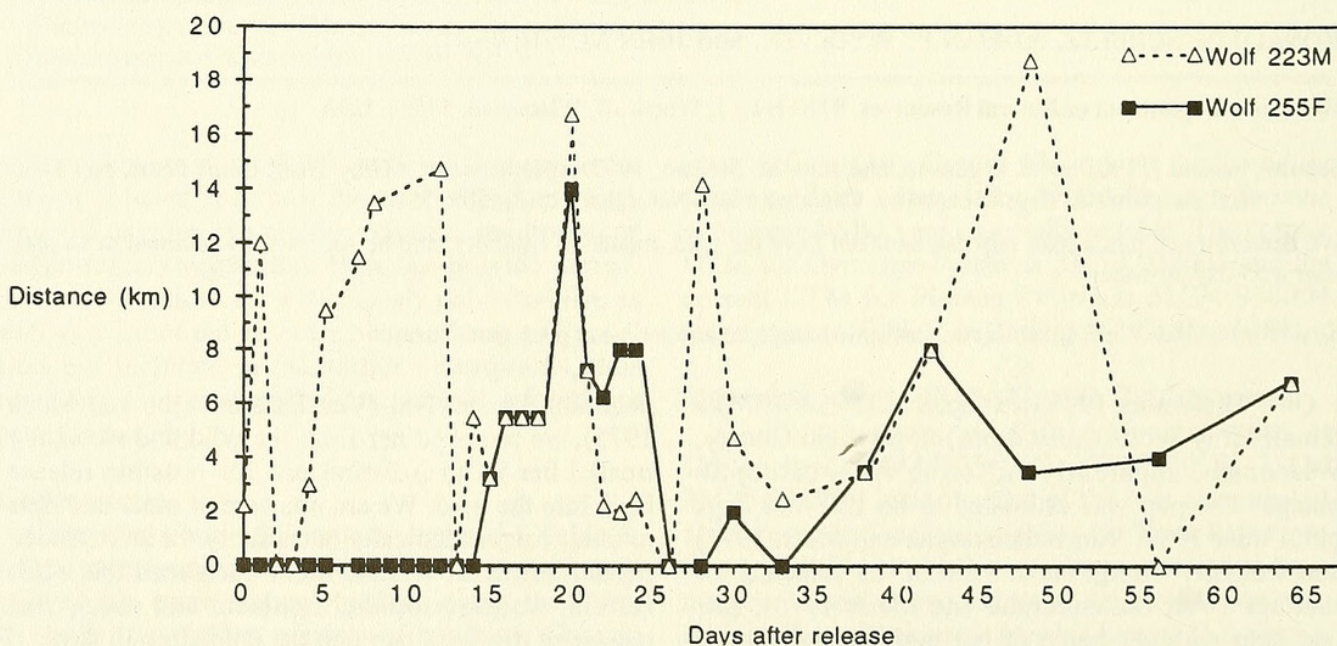


FIGURE 2. Distance of Gray Wolf 255F from the release site on successive days after release. The distance of wolf 223M from the release site is also shown for each successive day.

Wolf 255F's physical response to treatment was dramatic. She showed rapid weight gain ( $r^2 = <0.996$ ,  $P < 0.001$ ; Figure 1). By the time she was ready for release after 53 days in captivity, she weighed an estimated 16 kg (81% of the standard weight). Her alopecia was gone; her underfur and all of the guard hair had grown to nearly normal length. She had not become tame or docile over the course of her time in captivity.

On 12 October, 14 days before release, we immobilized wolf 255F, ear tagged her, and fitted her with a radio collar. We released her where captured, a rendezvous site visited periodically by her pack. Over an 18-day period prior to release, we left deer and beaver carcasses there to attract wolves. Twelve days before release we found fresh wolf tracks there. We released wolf 255F at 08:00 h on 25 October 1995, when wolf 223M was only 400m northwest.

We monitored the locations of wolf 255F and wolf 223M by radio-telemetry from both the ground (triangulation) and air (GPS plotting). Wolf 255F was monitored continuously for the first 72 hours after release. When wolf 223M was within 2 km, his location was also monitored continuously. Then both animals were located daily for the next four weeks, and weekly thereafter.

Wolf 223M did not join wolf 255F on the release day. Wolf 223M moved 13 km NW. Wolf 223M did join 255F on 27 October for 17 hours, but left without her. The next day wolf 223M was located 3km SE of 255F's location. Wolf 255F remained within a few hundred meters of the release site for 2 weeks (25 October–8 November).

The second known contact took place on the 13th day after release. Wolf 255F and wolf 223M were together at the release site for at least 3 hours. On the 15th day wolf 255F left the release site and joined 223M at a regularly used rendezvous site of the Rainbow Lake pack 3.3km SE of the release site (Figure 2).

Wolf 255F had spent 25% of her life away from her packmates. Possibly, the 14 days at the release site were necessary to re-acquaint herself with her pack.

Wolf 255F was found with her natal pack periodically throughout winter, until 27 March 1996, 154 days after her release. At about 1 year of age, in April 1996, wolf 255F dispersed and established a territory 38.4 km to the SW in February 1997. There, she met a dispersing adult male wolf 194M, from Douglas County. On 28 April 1997 wolf 255F died while giving birth to the second of two pups.

During 53 days of captivity and treatment, wolf 255F more than tripled her weight. Ivermectin was

effective in treating the apparent mange condition in this wolf similar to findings for dogs (Yazwinski et al. 1981). Although sarcoptes mange mites were not verified on wolf 255F, the alopecia was consistent with mange symptoms (Samuel 1981; Todd et al. 1981). After treatment, the pup was successfully returned to the Rainbow Lake Pack, but probably would not have survived without being treated (Van Ballenberghe and Mech 1975).

### Acknowledgments

Persons assisting in the capture and monitoring of wolves 255F and 223M included Sarah Boles, Clare Gower, Christopher Schultz, and students from Northland College including Dave Ehrhardt, Mandy Kline, Matt McKay, David Studey, Kate Turner-Studey, Mark Woodcock, and Melissa Woolford. Wolf Monitoring was funded by the Chequamegon National Forest, U.S. Fish and Wildlife Service, Section 6 Grant, Federal Aid in Wildlife Restoration Project W-154-R, Wisconsin Endangered Species Fund, the Timber Wolf Adopt-a-Pack Donations, and the Northland College Wolf Research Team Fund. Special thanks to Dave Mech for his help in editing.

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Received 31 March 1998

Accepted 21 January 1999



Schultz, Ronald N., Wydeven, Adrian P., and Stewart, John M. 1999.  
"Acceptance of a Gray Wolf, *Canis lupus*, pup by its natal pack after 53 days in captivity." *The Canadian field-naturalist* 113(3), 509–511.  
<https://doi.org/10.5962/p.358622>.

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**DOI:** <https://doi.org/10.5962/p.358622>

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